SEQUENCE LISTING

<110> Bertin, John
      Robison, Keith E.

<120> NOVEL MOLECULES OF THE CARD-RELATED
      PROTEIN FAMILY AND USES THEREOF

<130> 07334-136001

<140> US 09/697,089
<141> 2000-10-26

<150> US 60/161,822
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atc aca gat gac cta ttt gta tgg aat gtt ctg aat cgc gaa gaa gta   149
Ile Thr Asp Asp Leu Phe Val Trp Asn Val Leu Asn Arg Glu Glu Val
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aac atc att tgc tgc gag aag gtg gag cag gat gct gct aga ggg atc   197
Asn Ile Ile Cys Cys Glu Lys Val Glu Gln Asp Ala Ala Arg Gly Ile
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att cac atg att ttg aaa aag ggt tca gag tcc tgt aac ctc ttt ctt   245
Ile His Met Ile Leu Lys Lys Gly Ser Glu Ser Cys Asn Leu Phe Leu
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aaa tcc ctt aag gag tgg aac tat cct cta ttt cag gac ttg aat gga   293
Lys Ser Leu Lys Glu Trp Asn Tyr Pro Leu Phe Gln Asp Leu Asn Gly
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caa agt ctt ttt cat cag aca tca gaa gga gac ttg gac gat ttg gct   341

Gln Ser Leu Phe His Gln Thr Ser Glu Gly Asp Leu Asp Asp Leu Ala
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cag gat tta aag gac ttg tac cat acc cca tct ttt ctg aac ttt tat   389
Gln Asp Leu Lys Asp Leu Tyr His Thr Pro Ser Phe Leu Asn Phe Tyr
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ccc ctt ggt gaa gat att gac att att ttt aac ttg aaa agc acc ttc   437
Pro Leu Gly Glu Asp Ile Asp Ile Ile Phe Asn Leu Lys Ser Thr Phe
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aca gaa cct gtc ctg tgg agg aag gac caa cac cat cac cgc gtg gag   485
Thr Glu Pro Val Leu Trp Arg Lys Asp Gln His His His Arg Val Glu
135   140   145   150

cag ctg acc ctg aat ggc ctc ctg cag gct ctt cag agc ccc tgc atc   533
Gln Leu Thr Leu Asn Gly Leu Leu Gln Ala Leu Gln Ser Pro Cys Ile
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att gaa ggg gaa tct ggc aaa ggc aag tcc act ctg ctg cag cgc att   581
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gcc atg ctc tgg ggc tcc gga aag tgc aag gct ctg acc aag ttc aaa   629
Ala Met Leu Trp Gly Ser Gly Lys Cys Lys Ala Leu Thr Lys Phe Lys
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ttc gtc ttc ttc ctc cgt ctc agc agg gcc cag ggt gga ctt ttt gaa   677
Phe Val Phe Phe Leu Arg Leu Ser Arg Ala Gln Gly Gly Leu Phe Glu
200   205   210

acc ctc tgt gat caa ctc ctg gat ata cct ggc aca atc agg aag cag   725
Thr Leu Cys Asp Gln Leu Leu Asp Ile Pro Gly Thr Ile Arg Lys Gln
215   220   225   230

aca ttc atg gcc atg ctg ctg aag ctg cgg cag agg gtt ctt ttc ctt   773
Thr Phe Met Ala Met Leu Leu Lys Leu Arg Gln Arg Val Leu Phe Leu
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ctt gat ggc tac aat gaa ttc aag ccc cag aac tgc cca gaa atc gaa   821
Leu Asp Gly Tyr Asn Glu Phe Lys Pro Gln Asn Cys Pro Glu Ile Glu
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gcc ctg ata aag gaa aac cac cgc ttc aag aac atg gtc atc gtc acc   869
Ala Leu Ile Lys Glu Asn His Arg Phe Lys Asn Met Val Ile Val Thr
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act acc act gag tgc ctg agg cac ata cgg cag ttt ggt gcc ctg act   917
Thr Thr Thr Glu Cys Leu Arg His Ile Arg Gln Phe Gly Ala Leu Thr
280   285   290

gct gag gtg ggg gat atg aca gaa gac agc gcc cag gct ctc atc cga   965
Ala Glu Val Gly Asp Met Thr Glu Asp Ser Ala Gln Ala Leu Ile Arg
295   300   305   310

gaa gtg ctg atc aag gag ctt gct gaa ggc ttg ttg ctc caa att cag   1013
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atc act tgt gca atc cag atg ggt gaa agt gag ttc cac tct cac aca    1109
Ile Thr Cys Ala Ile Gln Met Gly Glu Ser Glu Phe His Ser His Thr
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caa aca acg ctg ttc cat acc ttc tat gat ctg ttg ata cag aaa aac    1157
Gln Thr Thr Leu Phe His Thr Phe Tyr Asp Leu Leu Ile Gln Lys Asn
360                 365                 370

aaa cac aaa cat aaa ggt gtg gct gca agt gac ttc att cgg agc ctg    1205
Lys His Lys His Lys Gly Val Ala Ala Ser Asp Phe Ile Arg Ser Leu
375                 380                 385                 390

gac cac tgt gga gac cta gct ctg gag ggt gtg ttc tcc cac aag ttt    1253
Asp His Cys Gly Asp Leu Ala Leu Glu Gly Val Phe Ser His Lys Phe
            395                 400                 405

gat ttc gaa ctg cag gat gtg tcc agc gtg aat gag gat gtc ctg ctg    1301
Asp Phe Glu Leu Gln Asp Val Ser Ser Val Asn Glu Asp Val Leu Leu
            410                 415                 420

aca act ggg ctc ctc tgt aaa tat aca gct caa agg ttc aag cca aag    1349
Thr Thr Gly Leu Leu Cys Lys Tyr Thr Ala Gln Arg Phe Lys Pro Lys
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tat aaa ttc ttt cac aag tca ttc cag gag tac aca gca gga cga aga    1397
Tyr Lys Phe Phe His Lys Ser Phe Gln Glu Tyr Thr Ala Gly Arg Arg
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ctc agc agt tta ttg acg tct cat gag cca gag gag gtg acc aag ggg    1445
Leu Ser Ser Leu Leu Thr Ser His Glu Pro Glu Glu Val Thr Lys Gly
455                 460                 465                 470

aat ggt tac ttg cag aaa atg gtt tcc att tcg gac att aca tcc act    1493
Asn Gly Tyr Leu Gln Lys Met Val Ser Ile Ser Asp Ile Thr Ser Thr
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tat agc agc ctg ctc cgg tac acc tgt ggg tca tct gtg gaa gcc acc    1541
Tyr Ser Ser Leu Leu Arg Tyr Thr Cys Gly Ser Ser Val Glu Ala Thr
                490                 495                 500

agg gct gtt atg aag cac ctc gca gca gtg tat caa cac ggc tgc ctt    1589
Arg Ala Val Met Lys His Leu Ala Ala Val Tyr Gln His Gly Cys Leu
        505                 510                 515

ctc gga ctt tcc atc gcc aag agg cct ctc tgg aga cag gaa tct ttg    1637
Leu Gly Leu Ser Ile Ala Lys Arg Pro Leu Trp Arg Gln Glu Ser Leu
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caa agt gtg aaa aac acc act gag caa gaa att ctg aaa gcc ata aac    1685
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atc aat tcc ttt gta gag tgt ggc atc cat tta tat caa gag agt aca      1733
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tcc aaa tca gcc ctg agc caa gaa ttt gaa gct ttc ttt caa ggt aaa      1781
Ser Lys Ser Ala Leu Ser Gln Glu Phe Glu Ala Phe Phe Gln Gly Lys
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agc tta tat atc aac tca ggg aac atc ccc gat tac tta ttt gac ttc      1829
Ser Leu Tyr Ile Asn Ser Gly Asn Ile Pro Asp Tyr Leu Phe Asp Phe
                585             590             595

ttt gaa cat ttg ccc aat tgt gca agt gct ctg gac ttc att aaa ctg      1877
Phe Glu His Leu Pro Asn Cys Ala Ser Ala Leu Asp Phe Ile Lys Leu
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gac ttt tat ggg gga gct atg gct tca tgg gaa aag gct gca gaa gac      1925
Asp Phe Tyr Gly Gly Ala Met Ala Ser Trp Glu Lys Ala Ala Glu Asp
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aca ggt gga atc cac atg gaa gag gcc cca gaa acc tac att ccc agc      1973
Thr Gly Gly Ile His Met Glu Glu Ala Pro Glu Thr Tyr Ile Pro Ser
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agg gct gta tct ttg ttc ttc aac tgg aag cag gaa ttc agg act ctg      2021
Arg Ala Val Ser Leu Phe Phe Asn Trp Lys Gln Glu Phe Arg Thr Leu
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gag gtc aca ctc cgg gat ttc agc aag ttg aat aag caa gat atc aca      2069
Glu Val Thr Leu Arg Asp Phe Ser Lys Leu Asn Lys Gln Asp Ile Thr
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tat ctg ggg aaa ata ttc agc tct gcc aca agc ctc agg ctg caa ata      2117
Tyr Leu Gly Lys Ile Phe Ser Ser Ala Thr Ser Leu Arg Leu Gln Ile
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aag aga tgt gct ggt gtg gct gga agc ctc agt ttg gtc ctc agc acc      2165
Lys Arg Cys Ala Gly Val Ala Gly Ser Leu Ser Leu Val Leu Ser Thr
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tgt aag aac att tat tct ctc atg gtg gaa gcc agt ccc ctc acc ata      2213
Cys Lys Asn Ile Tyr Ser Leu Met Val Glu Ala Ser Pro Leu Thr Ile
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gaa gat gag agg cac atc aca tct gta aca aac ctg aaa acc ttg agt      2261
Glu Asp Glu Arg His Ile Thr Ser Val Thr Asn Leu Lys Thr Leu Ser
                730             735             740

att cat gac cta cag aat caa cgg ctg ccg ggt ggt ctg act gac agc      2309
Ile His Asp Leu Gln Asn Gln Arg Leu Pro Gly Gly Leu Thr Asp Ser
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ttg ggt aac ttg aag aac ctt aca aag ctc ata atg gat aac ata aag      2357
Leu Gly Asn Leu Lys Asn Leu Thr Lys Leu Ile Met Asp Asn Ile Lys
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atg aat gaa gaa gat gct ata aaa cta gct gaa ggc ctg aaa aac ctg      2405
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775             780             785                 790

aag aag atg tgt tta ttt cat ttg acc cac ttg tct gac att gga gag      2453
Lys Lys Met Cys Leu Phe His Leu Thr His Leu Ser Asp Ile Gly Glu
            795             800             805

gga atg gat tac ata gtc aag tct ctg tca agt gaa ccc tgt gac ctt      2501
Gly Met Asp Tyr Ile Val Lys Ser Leu Ser Ser Glu Pro Cys Asp Leu
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gaa gaa att caa tta gtc tcc tgc tgc ttg tct gca aat gca gtg aaa      2549
Glu Glu Ile Gln Leu Val Ser Cys Cys Leu Ser Ala Asn Ala Val Lys
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atc cta gct cag aat ctt cac aat ttg gtc aaa ctg agc att ctt gat      2597
Ile Leu Ala Gln Asn Leu His Asn Leu Val Lys Leu Ser Ile Leu Asp
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tta tca gaa aat tac ctg gaa aaa gat gga aat gaa gct ctt cat gaa      2645
Leu Ser Glu Asn Tyr Leu Glu Lys Asp Gly Asn Glu Ala Leu His Glu
855             860             865                 870

ctg atc gac agg atg aac gtg cta gaa cag ctc acc gca ctg atg ctg      2693
Leu Ile Asp Arg Met Asn Val Leu Glu Gln Leu Thr Ala Leu Met Leu
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ccc tgg ggc tgt gac gtg caa ggc agc ctg agc agc ctg ttg aaa cat      2741
Pro Trp Gly Cys Asp Val Gln Gly Ser Leu Ser Ser Leu Leu Lys His
            890             895             900

ttg gag gag gtc cca caa ctc gtc aag ctt ggg ttg aaa aac tgg aga      2789
Leu Glu Glu Val Pro Gln Leu Val Lys Leu Gly Leu Lys Asn Trp Arg
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ctc aca gat aca gag att aga att tta ggt gca ttt ttt gga aag aac      2837
Leu Thr Asp Thr Glu Ile Arg Ile Leu Gly Ala Phe Phe Gly Lys Asn
            920             925             930

cct ctg aaa aac ttc cag cag ttg aat ttg gcg gga aat cgt gtg agc      2885
Pro Leu Lys Asn Phe Gln Gln Leu Asn Leu Ala Gly Asn Arg Val Ser
935             940             945                 950

agt gat gga tgg ctt gcc ttc atg ggt gta ttt gag aat ctt aag caa      2933
Ser Asp Gly Trp Leu Ala Phe Met Gly Val Phe Glu Asn Leu Lys Gln
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tta gtg ttt ttt gac ttt agt act aaa gaa ttt cta cct gat cca gca      2981
Leu Val Phe Phe Asp Phe Ser Thr Lys Glu Phe Leu Pro Asp Pro Ala
                970             975             980

tta gtc aga aaa ctt agc caa gtg tta tcc aag tta act ttt ctg caa      3029
Leu Val Arg Lys Leu Ser Gln Val Leu Ser Lys Leu Thr Phe Leu Gln
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gaa gct agg ctt gtt ggg tgg caa ttt gat gat gat gat ctc agt gtt      3077
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Asp Ala Ala Arg Gly Ile Ile His Met Ile Leu Lys Lys Gly Ser Glu
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Ser Cys Asn Leu Phe Leu Lys Ser Leu Lys Glu Trp Asn Tyr Pro Leu
65                  70                  75                  80
Phe Gln Asp Leu Asn Gly Gln Ser Leu Phe His Gln Thr Ser Glu Gly
             85                  90                  95
Asp Leu Asp Asp Leu Ala Gln Asp Leu Lys Asp Leu Tyr His Thr Pro
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Ser Phe Leu Asn Phe Tyr Pro Leu Gly Glu Asp Ile Asp Ile Ile Phe
            115                 120                 125
Asn Leu Lys Ser Thr Phe Thr Glu Pro Val Leu Trp Arg Lys Asp Gln
            130                 135                 140
His His His Arg Val Glu Gln Leu Thr Leu Asn Gly Leu Leu Gln Ala
145                 150                 155                 160
Leu Gln Ser Pro Cys Ile Ile Glu Gly Glu Ser Gly Lys Gly Lys Ser
                165                 170                 175
Thr Leu Leu Gln Arg Ile Ala Met Leu Trp Gly Ser Gly Lys Cys Lys
                180                 185                 190
Ala Leu Thr Lys Phe Lys Phe Val Phe Phe Leu Arg Leu Ser Arg Ala
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Gln Gly Gly Leu Phe Glu Thr Leu Cys Asp Gln Leu Leu Asp Ile Pro
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Gly Thr Ile Arg Lys Gln Thr Phe Met Ala Met Leu Leu Lys Leu Arg
225                 230                 235                 240
Gln Arg Val Leu Phe Leu Leu Asp Gly Tyr Asn Glu Phe Lys Pro Gln
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Asn Cys Pro Glu Ile Glu Ala Leu Ile Lys Glu Asn His Arg Phe Lys
                260                 265                 270
Asn Met Val Ile Val Thr Thr Thr Glu Cys Leu Arg His Ile Arg
            275                 280                 285
Gln Phe Gly Ala Leu Thr Ala Glu Val Gly Asp Met Thr Glu Asp Ser
            290                 295                 300
Ala Gln Ala Leu Ile Arg Glu Val Leu Ile Lys Glu Leu Ala Glu Gly
305                 310                 315                 320
Leu Leu Leu Gln Ile Gln Lys Ser Arg Cys Leu Arg Asn Leu Met Lys
                325                 330                 335
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        370             375             380
Asp Phe Ile Arg Ser Leu Asp His Cys Gly Asp Leu Ala Leu Glu Gly
385             390             395             400
Val Phe Ser His Lys Phe Asp Phe Glu Leu Gln Asp Val Ser Ser Val
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Asn Glu Asp Val Leu Leu Thr Thr Gly Leu Leu Cys Lys Tyr Thr Ala
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Gln Arg Phe Lys Pro Lys Tyr Lys Phe Phe His Lys Ser Phe Gln Glu
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Tyr Thr Ala Gly Arg Arg Leu Ser Ser Leu Leu Thr Ser His Glu Pro
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Ser Ser Val Glu Ala Thr Arg Ala Val Met Lys His Leu Ala Ala Val
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Tyr Gln His Gly Cys Leu Leu Gly Leu Ser Ile Ala Lys Arg Pro Leu
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Trp Arg Gln Glu Ser Leu Gln Ser Val Lys Asn Thr Thr Glu Gln Glu
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Ile Leu Lys Ala Ile Asn Ile Asn Ser Phe Val Glu Cys Gly Ile His
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Ala Phe Phe Gln Gly Lys Ser Leu Tyr Ile Asn Ser Gly Asn Ile Pro
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Asp Tyr Leu Phe Asp Phe Phe Glu His Leu Pro Asn Cys Ala Ser Ala
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Leu Asp Phe Ile Lys Leu Asp Phe Tyr Gly Gly Ala Met Ala Ser Trp
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Ala Ser Pro Leu Thr Ile Glu Asp Glu Arg His Ile Thr Ser Val Thr
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Gly Gly Leu Thr Asp Ser Leu Gly Asn Leu Lys Asn Leu Thr Lys Leu
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ataaaactag ctgaaggcct gaaaaacctg aagaagatgt gtttatttca tttgacccac    2400
ttgtctgaca ttggagaggg aatggattac atagtcaagt ctctgtcaag tgaaccctgt    2460
gaccttgaag aaattcaatt agtctcctgc tgcttgtctg caaatgcagt gaaaatccta    2520
gctcagaatc ttcacaattt ggtcaaactg agcattcttg atttatcaga aaattacctg    2580
gaaaaagatg gaaatgaagc tcttcatgaa ctgatcgaca ggatgaacgt gctagaacag    2640
ctcaccgcac tgatgctgcc ctggggctgt gacgtgcaag gcagcctgag cagcctgttg    2700
aaacatttgg aggaggtccc acaactcgtc aagcttgggt tgaaaaactg gagactcaca    2760
gatacagaga ttagaatttt aggtgcattt tttggaaaga accctctgaa aaacttccag    2820
cagttgaatt tggcgggaaa tcgtgtgagc agtgatggat ggcttgcctt catgggtgta    2880
tttgagaatc ttaagcaatt agtgtttttt gactttagta ctaaagaatt tctacctgat    2940
ccagcattag tcagaaaact tagccaagtg ttatccaagt taactttct gcaagaagct    3000
aggcttgttg ggtggcaatt tgatgatgat gatctcagtg ttattacagg tgctttaaa     3060
ctagtaactg ct                                                         3072
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<210> 4
<211> 3615
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(3612)

<400> 4

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atg ctg aac gct ggt ccc ctg ggc tcc ctt att tct ttc tct ata ctt     48
Met Leu Asn Ala Gly Pro Leu Gly Ser Leu Ile Ser Phe Ser Ile Leu
 1               5                  10                  15


tgt ctc tgt gtc ttt ttc ttt tcc aag tct ctc gtt cca cct aac gag     96
Cys Leu Cys Val Phe Phe Phe Ser Lys Ser Leu Val Pro Pro Asn Glu
             20                  25                  30


aaa cac cca cag aac aag aag gta tct ggt cta caa gaa ctc gag gcc    144
Lys His Pro Gln Asn Lys Lys Val Ser Gly Leu Gln Glu Leu Glu Ala
         35                  40                  45


tca ctg aaa cgg aaa gca aat aca aag aaa ctt tat ttt aaa aac atg    192
Ser Leu Lys Arg Lys Ala Asn Thr Lys Lys Leu Tyr Phe Lys Asn Met
     50                  55                  60
```

```
tct tgg tct ccc aag aag agg gca att gga ttg ctc agc cag aga ccc        240
Ser Trp Ser Pro Lys Lys Arg Ala Ile Gly Leu Leu Ser Gln Arg Pro
 65              70              75                      80

ttg cag gca gac aca caa gcg gct gga cgt cga gag gaa cac atc ggc        288
Leu Gln Ala Asp Thr Gln Ala Ala Gly Arg Arg Glu Glu His Ile Gly
                 85                      90                  95

gga aga aca tac aag cag ctg gac gtc cag agg acg ttg aag gga gaa        336
Gly Arg Thr Tyr Lys Gln Leu Asp Val Gln Arg Thr Leu Lys Gly Glu
                100             105             110

tgc tgg cgg aag agc aca caa cag aca tcg gca cgc cag cag gcc atc        384
Cys Trp Arg Lys Ser Thr Gln Gln Thr Ser Ala Arg Gln Gln Ala Ile
            115             120             125

cac cag agg aac gac tcg gag ttt ggc ctg gag gtg aat ttc ata aag        432
His Gln Arg Asn Asp Ser Glu Phe Gly Leu Glu Val Asn Phe Ile Lys
        130             135             140

gac aat agc cga gcc ctt att caa aga atg gga atg act gtt ata aag        480
Asp Asn Ser Arg Ala Leu Ile Gln Arg Met Gly Met Thr Val Ile Lys
145             150             155             160

caa atc aca gat gac cta ttt gta tgg aat gtt ctg aat cgc gaa gaa        528
Gln Ile Thr Asp Asp Leu Phe Val Trp Asn Val Leu Asn Arg Glu Glu
                165             170             175

gta aac atc att tgc tgc gag aag gtg gag cag gat gct gct aga ggg        576
Val Asn Ile Ile Cys Cys Glu Lys Val Glu Gln Asp Ala Ala Arg Gly
            180             185             190

atc att cac atg att ttg aaa aag ggt tca gag tcc tgt aac ctc ttt        624
Ile Ile His Met Ile Leu Lys Lys Gly Ser Glu Ser Cys Asn Leu Phe
        195             200             205

ctt aaa tcc ctt aag gag tgg aac tat cct cta ttt cag gac ttg aat        672
Leu Lys Ser Leu Lys Glu Trp Asn Tyr Pro Leu Phe Gln Asp Leu Asn
    210             215             220

gga caa agt ttt gag gag aca cag aat tgg gtc ttc ttt aac atc acc        720
Gly Gln Ser Phe Glu Glu Thr Gln Asn Trp Val Phe Phe Asn Ile Thr
225             230             235             240

tct tct cta ata ggt ctt ttt cat cag aca tca gaa gga gac ttg gac        768
Ser Ser Leu Ile Gly Leu Phe His Gln Thr Ser Glu Gly Asp Leu Asp
            245             250             255

gat ttg gct cag gat tta aag gac ttg tac cat acc cca tct ttt ctg        816
Asp Leu Ala Gln Asp Leu Lys Asp Leu Tyr His Thr Pro Ser Phe Leu
            260             265             270

aac ttt tat ccc ctt ggt gaa gat att gac att att ttt aac ttg aaa        864
Asn Phe Tyr Pro Leu Gly Glu Asp Ile Asp Ile Ile Phe Asn Leu Lys
        275             280             285
```

```
agc acc ttc aca gaa cct gtc ctg tgg agg aag gac caa cac cat cac          912
Ser Thr Phe Thr Glu Pro Val Leu Trp Arg Lys Asp Gln His His His
    290                 295                 300

cgc gtg gag cag ctg acc ctg aat ggc ctc ctg cag gct ctt cag agc          960
Arg Val Glu Gln Leu Thr Leu Asn Gly Leu Leu Gln Ala Leu Gln Ser
305                 310                 315                 320

ccc tgc atc att gaa ggg gaa tct ggc aaa ggc aag tcc act ctg ctg         1008
Pro Cys Ile Ile Glu Gly Glu Ser Gly Lys Gly Lys Ser Thr Leu Leu
                325                 330                 335

cag cga att gcc atg ctc tgg ggc tcc gga aag tgc aag gct ctg acc         1056
Gln Arg Ile Ala Met Leu Trp Gly Ser Gly Lys Cys Lys Ala Leu Thr
            340                 345                 350

aag ttc aaa ttc gtc ttc ttc ctc cgt ctc agc agg gcc cag ggt gga        1104
Lys Phe Lys Phe Val Phe Phe Leu Arg Leu Ser Arg Ala Gln Gly Gly
            355                 360                 365

ctt ttt gaa acc ctc tgt gat caa ctc ctg gat ata cct ggc aca atc        1152
Leu Phe Glu Thr Leu Cys Asp Gln Leu Leu Asp Ile Pro Gly Thr Ile
        370                 375                 380

agg aag cag aca ttc atg gcc atg ctg ctg aag ctg cgg cag agg gtt        1200
Arg Lys Gln Thr Phe Met Ala Met Leu Leu Lys Leu Arg Gln Arg Val
385                 390                 395                 400

ctt ttc ctt ctt gat ggc tac aat gaa ttc aag ccc cag aac tgc cca        1248
Leu Phe Leu Leu Asp Gly Tyr Asn Glu Phe Lys Pro Gln Asn Cys Pro
                405                 410                 415

gaa atc gaa gcc ctg ata aag gaa aac cac cgc ttc aag aac atg gtc        1296
Glu Ile Glu Ala Leu Ile Lys Glu Asn His Arg Phe Lys Asn Met Val
            420                 425                 430

atc gtc acc act acc act gag tgc ctg agg cac ata cgg cag ttt ggt        1344
Ile Val Thr Thr Thr Thr Glu Cys Leu Arg His Ile Arg Gln Phe Gly
            435                 440                 445

gcc ctg act gct gag gtg ggg gat atg aca gaa gac agc gcc cag gct        1392
Ala Leu Thr Ala Glu Val Gly Asp Met Thr Glu Asp Ser Ala Gln Ala
        450                 455                 460

ctc atc cga gaa gtg ctg atc aag gag ctt gct gaa ggc ttg ttg ctc        1440
Leu Ile Arg Glu Val Leu Ile Lys Glu Leu Ala Glu Gly Leu Leu Leu
465                 470                 475                 480

caa att cag aaa tcc agg tgc ttg agg aat ctc atg aag acc cct ctc        1488
Gln Ile Gln Lys Ser Arg Cys Leu Arg Asn Leu Met Lys Thr Pro Leu
                485                 490                 495

ttt gtg gtc atc act tgt gca atc cag atg ggt gaa agt gag ttc cac        1536
Phe Val Val Ile Thr Cys Ala Ile Gln Met Gly Glu Ser Glu Phe His
                500                 505                 510

tct cac aca caa aca acg ctg ttc cat acc ttc tat gat ctg ttg ata        1584
```

```
Ser His Thr Gln Thr Thr Leu Phe His Thr Phe Tyr Asp Leu Leu Ile
        515             520             525
```

```
cag aaa aac aaa cac aaa cat aaa ggt gtg gct gca agt gac ttc att    1632
Gln Lys Asn Lys His Lys His Lys Gly Val Ala Ala Ser Asp Phe Ile
        530             535             540
```

```
cgg agc ctg gac cac tgt gga gac cta gct ctg gag ggt gtg ttc tcc    1680
Arg Ser Leu Asp His Cys Gly Asp Leu Ala Leu Glu Gly Val Phe Ser
545             550             555             560
```

```
cac aag ttt gat ttc gaa ctg cag gat gtg tcc agc gtg aat gag gat    1728
His Lys Phe Asp Phe Glu Leu Gln Asp Val Ser Ser Val Asn Glu Asp
            565             570             575
```

```
gtc ctg ctg aca act ggg ctc ctc tgt aaa tat aca gct caa agg ttc    1776
Val Leu Leu Thr Thr Gly Leu Leu Cys Lys Tyr Thr Ala Gln Arg Phe
            580             585             590
```

```
aag cca aag tat aaa ttc ttt cac aag tca ttc cag gag tac aca gca    1824
Lys Pro Lys Tyr Lys Phe Phe His Lys Ser Phe Gln Glu Tyr Thr Ala
            595             600             605
```

```
gga cga aga ctc agc agt tta ttg acg tct cat gag cca gag gag gtg    1872
Gly Arg Arg Leu Ser Ser Leu Leu Thr Ser His Glu Pro Glu Glu Val
        610             615             620
```

```
acc aag ggg aat ggt tac ttg cag aaa atg gtt tcc att tcg gac att    1920
Thr Lys Gly Asn Gly Tyr Leu Gln Lys Met Val Ser Ile Ser Asp Ile
625             630             635             640
```

```
aca tcc act tat agc agc ctg ctc cgg tac acc tgt ggg tca tct gtg    1968
Thr Ser Thr Tyr Ser Ser Leu Leu Arg Tyr Thr Cys Gly Ser Ser Val
            645             650             655
```

```
gaa gcc acc agg gct gtt atg aag cac ctc gca gca gtg tat caa cac    2016
Glu Ala Thr Arg Ala Val Met Lys His Leu Ala Ala Val Tyr Gln His
            660             665             670
```

```
ggc tgc ctt ctc gga ctt tcc atc gcc aag agg cct ctc tgg aga cag    2064
Gly Cys Leu Leu Gly Leu Ser Ile Ala Lys Arg Pro Leu Trp Arg Gln
        675             680             685
```

```
gaa tct ttg caa agt gtg aaa aac acc act gag caa gaa att ctg aaa    2112
Glu Ser Leu Gln Ser Val Lys Asn Thr Thr Glu Gln Glu Ile Leu Lys
        690             695             700
```

```
gcc ata aac atc aat tcc ttt gta gag tgt ggc atc cat tta tat caa    2160
Ala Ile Asn Ile Asn Ser Phe Val Glu Cys Gly Ile His Leu Tyr Gln
705             710             715             720
```

```
gag agt aca tcc aaa tca gcc ctg agc caa gaa ttt gaa gct ttc ttt    2208
Glu Ser Thr Ser Lys Ser Ala Leu Ser Gln Glu Phe Glu Ala Phe Phe
            725             730             735
```

```
caa ggt aaa agc tta tat atc aac tca ggg aac atc ccc gat tac tta    2256
Gln Gly Lys Ser Leu Tyr Ile Asn Ser Gly Asn Ile Pro Asp Tyr Leu
```

```
                  740                        745                        750

ttt gac ttc ttt gaa cat ttg ccc aat tgt gca agt gcc ctg gac ttc          2304
Phe Asp Phe Phe Glu His Leu Pro Asn Cys Ala Ser Ala Leu Asp Phe
        755                    760                    765

att aaa ctg gac ttt tat ggg gga gct atg gct tca tgg gaa aag gct          2352
Ile Lys Leu Asp Phe Tyr Gly Gly Ala Met Ala Ser Trp Glu Lys Ala
        770                    775                    780

gca gaa gac aca ggt gga atc cac atg gaa gag gcc cca gaa acc tac          2400
Ala Glu Asp Thr Gly Gly Ile His Met Glu Glu Ala Pro Glu Thr Tyr
785                    790                    795                    800

att ccc agc agg gct gta tct ttg ttc ttc aac tgg aag cag gaa ttc          2448
Ile Pro Ser Arg Ala Val Ser Leu Phe Phe Asn Trp Lys Gln Glu Phe
                805                    810                    815

agg act ctg gag gtc aca ctc cgg gat ttc agc aag ttg aat aag caa          2496
Arg Thr Leu Glu Val Thr Leu Arg Asp Phe Ser Lys Leu Asn Lys Gln
                820                    825                    830

gat atc aga tat ctg ggg aaa ata ttc agc tct gcc aca agc ctc agg          2544
Asp Ile Arg Tyr Leu Gly Lys Ile Phe Ser Ser Ala Thr Ser Leu Arg
                835                    840                    845

ctg caa ata aag aga tgt gct ggt gtg gct gga agc ctc agt ttg gtc          2592
Leu Gln Ile Lys Arg Cys Ala Gly Val Ala Gly Ser Leu Ser Leu Val
        850                    855                    860

ctc agc acc tgt aag aac att tat tct ctc atg gtg gaa gcc agt ccc          2640
Leu Ser Thr Cys Lys Asn Ile Tyr Ser Leu Met Val Glu Ala Ser Pro
865                    870                    875                    880

ctc acc ata gaa gat gag agg cac atc aca tct gta aca aac ctg aaa          2688
Leu Thr Ile Glu Asp Glu Arg His Ile Thr Ser Val Thr Asn Leu Lys
                885                    890                    895

acc ttg agt att cat gac cta cag aat caa cgg ctg ccg ggt ggt ctg          2736
Thr Leu Ser Ile His Asp Leu Gln Asn Gln Arg Leu Pro Gly Gly Leu
                900                    905                    910

act gac agc ttg ggt aac ttg aag aac ctt aca aag ctc ata atg gat          2784
Thr Asp Ser Leu Gly Asn Leu Lys Asn Leu Thr Lys Leu Ile Met Asp
        915                    920                    925

aac ata aag atg aat gaa gaa gat gct ata aaa cta gct gaa ggc ctg          2832
Asn Ile Lys Met Asn Glu Glu Asp Ala Ile Lys Leu Ala Glu Gly Leu
        930                    935                    940

aaa aac ctg aag aag atg tgt tta ttt cat ttg acc cac ttg tct gac          2880
Lys Asn Leu Lys Lys Met Cys Leu Phe His Leu Thr His Leu Ser Asp
945                    950                    955                    960

att gga gag gga atg gat tac ata gtc aag tct ctg tca agt gaa ccc          2928
Ile Gly Glu Gly Met Asp Tyr Ile Val Lys Ser Leu Ser Ser Glu Pro
                965                    970                    975
```

```
tgt gac ctt gaa gaa att caa tta gtc tcc tgc tgc ttg tct gca aat      2976
Cys Asp Leu Glu Glu Ile Gln Leu Val Ser Cys Cys Leu Ser Ala Asn
            980                 985                 990

gca gtg aaa atc cta gct cag aat ctt cac aat ttg gtc aaa ctg agc      3024
Ala Val Lys Ile Leu Ala Gln Asn Leu His Asn Leu Val Lys Leu Ser
            995                1000                1005

att ctt gat tta tca gaa aat tac ctg gaa aaa gat gga aat gaa gct      3072
Ile Leu Asp Leu Ser Glu Asn Tyr Leu Glu Lys Asp Gly Asn Glu Ala
     1010                1015                1020

ctt cat gaa ctg atc gac agg atg aac gtg cta gaa cag ctc acc gca      3120
Leu His Glu Leu Ile Asp Arg Met Asn Val Leu Glu Gln Leu Thr Ala
1025                1030                1035                1040

ctg atg ctg ccc tgg ggc tgt gac gtg caa ggc agc ctg agc agc ctg      3168
Leu Met Leu Pro Trp Gly Cys Asp Val Gln Gly Ser Leu Ser Ser Leu
            1045                1050                1055

ttg aaa cat ttg gag gag gtc cca caa ctc gtc aag ctt ggg ttg aaa      3216
Leu Lys His Leu Glu Glu Val Pro Gln Leu Val Lys Leu Gly Leu Lys
            1060                1065                1070

aac tgg aga ctc aca gat aca gag att aga att tta ggt gca ttt ttt      3264
Asn Trp Arg Leu Thr Asp Thr Glu Ile Arg Ile Leu Gly Ala Phe Phe
            1075                1080                1085

gga aag aac cct ctg aaa aac ttc cag cag ttg aat ttg gcg gga aat      3312
Gly Lys Asn Pro Leu Lys Asn Phe Gln Gln Leu Asn Leu Ala Gly Asn
            1090                1095                1100

cgt gtg agc agt gat gga tgg ctt gcc ttc atg ggt gta ttt gag aat      3360
Arg Val Ser Ser Asp Gly Trp Leu Ala Phe Met Gly Val Phe Glu Asn
1105                1110                1115                1120

ctt aag caa tta gtg ttt ttt gac ttt agt act aaa gaa ttt cta cct      3408
Leu Lys Gln Leu Val Phe Phe Asp Phe Ser Thr Lys Glu Phe Leu Pro
            1125                1130                1135

gat cca gca tta gtc aga aaa ctt agc caa gtg tta tcc aag tta act      3456
Asp Pro Ala Leu Val Arg Lys Leu Ser Gln Val Leu Ser Lys Leu Thr
            1140                1145                1150

ttt ctg caa gaa gct agg ctt gtt ggg tgg caa ttt gat gat gat gat      3504
Phe Leu Gln Glu Ala Arg Leu Val Gly Trp Gln Phe Asp Asp Asp Asp
            1155                1160                1165

ctc agt gtt att aca gat gag aaa gct cag atg att tgc cca tgg gtt      3552
Leu Ser Val Ile Thr Asp Glu Lys Ala Gln Met Ile Cys Pro Trp Val
            1170                1175                1180

ata aaa cta ctt cct tac aca gtg gca gca tca gaa ctg gaa ttc aga      3600
Ile Lys Leu Leu Pro Tyr Thr Val Ala Ala Ser Glu Leu Glu Phe Arg
1185                1190                1195                1200
```

```
tct ctt gcc tcc tag                                                3615
Ser Leu Ala Ser
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<210> 5
<211> 1204
<212> PRT
<213> Homo sapiens

<400> 5

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Met Leu Asn Ala Gly Pro Leu Gly Ser Leu Ile Ser Phe Ser Ile Leu
 1               5                   10                  15
Cys Leu Cys Val Phe Phe Phe Ser Lys Ser Leu Val Pro Pro Asn Glu
            20                  25                  30
Lys His Pro Gln Asn Lys Lys Val Ser Gly Leu Gln Glu Leu Glu Ala
        35                  40                  45
Ser Leu Lys Arg Lys Ala Asn Thr Lys Lys Leu Tyr Phe Lys Asn Met
    50                  55                  60
Ser Trp Ser Pro Lys Lys Arg Ala Ile Gly Leu Leu Ser Gln Arg Pro
65                  70                  75                  80
Leu Gln Ala Asp Thr Gln Ala Ala Gly Arg Arg Glu Glu His Ile Gly
            85                  90                  95
Gly Arg Thr Tyr Lys Gln Leu Asp Val Gln Arg Thr Leu Lys Gly Glu
            100                 105                 110
Cys Trp Arg Lys Ser Thr Gln Gln Thr Ser Ala Arg Gln Gln Ala Ile
        115                 120                 125
His Gln Arg Asn Asp Ser Glu Phe Gly Leu Glu Val Asn Phe Ile Lys
    130                 135                 140
Asp Asn Ser Arg Ala Leu Ile Gln Arg Met Gly Met Thr Val Ile Lys
145                 150                 155                 160
Gln Ile Thr Asp Asp Leu Phe Val Trp Asn Val Leu Asn Arg Glu Glu
            165                 170                 175
Val Asn Ile Ile Cys Cys Glu Lys Val Glu Gln Asp Ala Ala Arg Gly
            180                 185                 190
Ile Ile His Met Ile Leu Lys Lys Gly Ser Glu Ser Cys Asn Leu Phe
            195                 200                 205
Leu Lys Ser Leu Lys Glu Trp Asn Tyr Pro Leu Phe Gln Asp Leu Asn
    210                 215                 220
Gly Gln Ser Phe Glu Glu Thr Gln Asn Trp Val Phe Phe Asn Ile Thr
225                 230                 235                 240
Ser Ser Leu Ile Gly Leu Phe His Gln Thr Ser Glu Gly Asp Leu Asp
            245                 250                 255
Asp Leu Ala Gln Asp Leu Lys Asp Leu Tyr His Thr Pro Ser Phe Leu
            260                 265                 270
Asn Phe Tyr Pro Leu Gly Glu Asp Ile Asp Ile Ile Phe Asn Leu Lys
            275                 280                 285
Ser Thr Phe Thr Glu Pro Val Leu Trp Arg Lys Asp Gln His His His
            290                 295                 300
Arg Val Glu Gln Leu Thr Leu Asn Gly Leu Leu Gln Ala Leu Gln Ser
305                 310                 315                 320
Pro Cys Ile Ile Glu Gly Glu Ser Gly Lys Gly Lys Ser Thr Leu Leu
            325                 330                 335
Gln Arg Ile Ala Met Leu Trp Gly Ser Gly Lys Cys Lys Ala Leu Thr
            340                 345                 350
Lys Phe Lys Phe Val Phe Phe Leu Arg Leu Ser Arg Ala Gln Gly Gly
            355                 360                 365
```

```
Leu Phe Glu Thr Leu Cys Asp Gln Leu Leu Asp Ile Pro Gly Thr Ile
    370                 375             380
Arg Lys Gln Thr Phe Met Ala Met Leu Leu Lys Leu Arg Gln Arg Val
385             390             395                 400
Leu Phe Leu Leu Asp Gly Tyr Asn Glu Phe Lys Pro Gln Asn Cys Pro
            405             410                 415
Glu Ile Glu Ala Leu Ile Lys Glu Asn His Arg Phe Lys Asn Met Val
            420             425             430
Ile Val Thr Thr Thr Thr Glu Cys Leu Arg His Ile Arg Gln Phe Gly
        435             440             445
Ala Leu Thr Ala Glu Val Gly Asp Met Thr Glu Asp Ser Ala Gln Ala
    450             455             460
Leu Ile Arg Glu Val Leu Ile Lys Glu Leu Ala Glu Gly Leu Leu Leu
465             470             475                 480
Gln Ile Gln Lys Ser Arg Cys Leu Arg Asn Leu Met Lys Thr Pro Leu
            485             490                 495
Phe Val Val Ile Thr Cys Ala Ile Gln Met Gly Glu Ser Glu Phe His
            500             505             510
Ser His Thr Gln Thr Thr Leu Phe His Thr Phe Tyr Asp Leu Leu Ile
    515             520             525
Gln Lys Asn Lys His Lys His Lys Gly Val Ala Ala Ser Asp Phe Ile
    530             535             540
Arg Ser Leu Asp His Cys Gly Asp Leu Ala Leu Glu Gly Val Phe Ser
545             550             555                 560
His Lys Phe Asp Phe Glu Leu Gln Asp Val Ser Ser Val Asn Glu Asp
            565             570             575
Val Leu Leu Thr Thr Gly Leu Leu Cys Lys Tyr Thr Ala Gln Arg Phe
        580             585             590
Lys Pro Lys Tyr Lys Phe Phe His Lys Ser Phe Gln Glu Tyr Thr Ala
    595             600             605
Gly Arg Arg Leu Ser Ser Leu Leu Thr Ser His Glu Pro Glu Glu Val
    610             615             620
Thr Lys Gly Asn Gly Tyr Leu Gln Lys Met Val Ser Ile Ser Asp Ile
625             630             635                 640
Thr Ser Thr Tyr Ser Ser Leu Leu Arg Tyr Thr Cys Gly Ser Ser Val
            645             650             655
Glu Ala Thr Arg Ala Val Met Lys His Leu Ala Ala Val Tyr Gln His
            660             665             670
Gly Cys Leu Leu Gly Leu Ser Ile Ala Lys Arg Pro Leu Trp Arg Gln
    675             680             685
Glu Ser Leu Gln Ser Val Lys Asn Thr Thr Glu Gln Glu Ile Leu Lys
    690             695             700
Ala Ile Asn Ile Asn Ser Phe Val Glu Cys Gly Ile His Leu Tyr Gln
705             710             715                 720
Glu Ser Thr Ser Lys Ser Ala Leu Ser Gln Glu Phe Glu Ala Phe Phe
            725             730                 735
Gln Gly Lys Ser Leu Tyr Ile Asn Ser Gly Asn Ile Pro Asp Tyr Leu
            740             745             750
Phe Asp Phe Phe Glu His Leu Pro Asn Cys Ala Ser Ala Leu Asp Phe
            755             760             765
Ile Lys Leu Asp Phe Tyr Gly Gly Ala Met Ala Ser Trp Glu Lys Ala
    770             775             780
Ala Glu Asp Thr Gly Gly Ile His Met Glu Glu Ala Pro Glu Thr Tyr
785             790             795                 800
Ile Pro Ser Arg Ala Val Ser Leu Phe Phe Asn Trp Lys Gln Glu Phe
            805             810                 815
Arg Thr Leu Glu Val Thr Leu Arg Asp Phe Ser Lys Leu Asn Lys Gln
```

```
                 820                      825                      830
Asp Ile Arg Tyr Leu Gly Lys Ile Phe Ser Ser Ala Thr Ser Leu Arg
            835                      840                      845
Leu Gln Ile Lys Arg Cys Ala Gly Val Ala Gly Ser Leu Ser Leu Val
        850                      855                      860
Leu Ser Thr Cys Lys Asn Ile Tyr Ser Leu Met Val Glu Ala Ser Pro
865                      870                      875                      880
Leu Thr Ile Glu Asp Glu Arg His Ile Thr Ser Val Thr Asn Leu Lys
                 885                      890                      895
Thr Leu Ser Ile His Asp Leu Gln Asn Gln Arg Leu Pro Gly Gly Leu
                 900                      905                      910
Thr Asp Ser Leu Gly Asn Leu Lys Asn Leu Thr Lys Leu Ile Met Asp
             915                      920                      925
Asn Ile Lys Met Asn Glu Glu Asp Ala Ile Lys Leu Ala Glu Gly Leu
        930                      935                      940
Lys Asn Leu Lys Lys Met Cys Leu Phe His Leu Thr His Leu Ser Asp
945                      950                      955                      960
Ile Gly Glu Gly Met Asp Tyr Ile Val Lys Ser Leu Ser Ser Glu Pro
                 965                      970                      975
Cys Asp Leu Glu Glu Ile Gln Leu Val Ser Cys Cys Leu Ser Ala Asn
             980                      985                      990
Ala Val Lys Ile Leu Ala Gln Asn Leu His Asn Leu Val Lys Leu Ser
             995                      1000                     1005
Ile Leu Asp Leu Ser Glu Asn Tyr Leu Glu Lys Asp Gly Asn Glu Ala
        1010                     1015                     1020
Leu His Glu Leu Ile Asp Arg Met Asn Val Leu Glu Gln Leu Thr Ala
1025                     1030                     1035                     1040
Leu Met Leu Pro Trp Gly Cys Asp Val Gln Gly Ser Leu Ser Ser Leu
                 1045                     1050                     1055
Leu Lys His Leu Glu Glu Val Pro Gln Leu Val Lys Leu Gly Leu Lys
             1060                     1065                     1070
Asn Trp Arg Leu Thr Asp Thr Glu Ile Arg Ile Leu Gly Ala Phe Phe
             1075                     1080                     1085
Gly Lys Asn Pro Leu Lys Asn Phe Gln Gln Leu Asn Leu Ala Gly Asn
             1090                     1095                     1100
Arg Val Ser Ser Asp Gly Trp Leu Ala Phe Met Gly Val Phe Glu Asn
1105                     1110                     1115                     1120
Leu Lys Gln Leu Val Phe Phe Asp Phe Ser Thr Lys Glu Phe Leu Pro
                 1125                     1130                     1135
Asp Pro Ala Leu Val Arg Lys Leu Ser Gln Val Leu Ser Lys Leu Thr
             1140                     1145                     1150
Phe Leu Gln Glu Ala Arg Leu Val Gly Trp Gln Phe Asp Asp Asp
        1155                     1160                     1165
Leu Ser Val Ile Thr Asp Glu Lys Ala Gln Met Ile Cys Pro Trp Val
        1170                     1175                     1180
Ile Lys Leu Leu Pro Tyr Thr Val Ala Ala Ser Glu Leu Glu Phe Arg
1185                     1190                     1195                     1200
Ser Leu Ala Ser
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<210> 6
<211> 3612
<212> DNA
<213> Homo sapiens

<400> 6
atgctgaacg ctggtcccct gggctccctt atttctttct ctatactttg tctctgtgtc   60

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tttttctttt ccaagtctct cgttccacct aacgagaaac acccacagaa caagaaggta  120
tctggtctac aagaactcga ggcctcactg aaacggaaag caaatacaaa gaaactttat  180
tttaaaaaca tgtcttggtc tcccaagaag agggcaattg gattgctcag ccagagaccc  240
ttgcaggcag acacacaagc ggctggacgt cgagaggaac acatcggcgg aagaacatac  300
aagcagctgg acgtccagag gacgttgaag ggagaatgct ggcggaagag cacacaacag  360
acatcggcac gccagcaggc catccaccag aggaacgact cggagtttgg cctggaggtg  420
aatttcataa aggacaatag ccgagccctt attcaaagaa tgggaatgac tgttataaag  480
caaatcacag atgacctatt tgtatggaat gttctgaatc gcgaagaagt aaacatcatt  540
tgctgcgaga aggtggagca ggatgctgct agagggatca ttcacatgat tttgaaaaag  600
ggttcagagt cctgtaacct ctttcttaaa tcccttaagg agtggaacta tcctctattt  660
caggacttga atggacaaag ttttgaggag acacagaatt gggtcttctt taacatcacc  720
tcttctctaa taggtctttt tcatcagaca tcagaaggag acttggacga tttggctcag  780
gatttaaagg acttgtacca taccccatct tttctgaact tttatcccct tggtgaagat  840
attgacatta tttttaactt gaaaagcacc ttcacagaac ctgtcctgtg gaggaaggac  900
caacaccatc accgcgtgga gcagctgacc ctgaatggcc tcctgcaggc tcttcagagc  960
ccctgcatca ttgaagggga atctggcaaa ggcaagtcca ctctgctgca gcgaattgcc  1020
atgctctggg gctccggaaa gtgcaaggct ctgaccaagt tcaaattcgt cttcttcctc  1080
cgtctcagca gggcccaggg tggacttttt gaaaccctct gtgatcaact cctggatata  1140
cctggcacaa tcaggaagca gacattcatg gccatgctgc tgaagctgcg gcagagggtt  1200
cttttccttc ttgatggcta caatgaattc aagccccaga actgcccaga aatcgaagcc  1260
ctgataaagg aaaaccaccg cttcaagaac atggtcatcg tcaccactac cactgagtgc  1320
ctgaggcaca tacggcagtt tggtgccctg actgctgagg tggggatat gacagaagac  1380
agcgcccagg ctctcatccg agaagtgctg atcaaggagc ttgctgaagg cttgttgctc  1440
caaattcaga aatccaggtg cttgaggaat ctcatgaaga cccctctctt tgtggtcatc  1500
acttgtgcaa tccagatggg tgaaagtgag ttccactctc acacacaaac aacgctgttc  1560
cataccttct atgatctgtt gatacagaaa aacaaacaca aacataaagg tgtggctgca  1620
agtgacttca ttcggagcct ggaccactgt ggagacctag ctctggaggg tgtgttctcc  1680
cacaagtttg atttcgaact gcaggatgtg tccagcgtga atgaggatgt cctgctgaca  1740
actgggctcc tctgtaaata tacagctcaa aggttcaagc caaagtataa attctttcac  1800
aagtcattcc aggagtacac agcaggacga agactcagca gtttattgac gtctcatgag  1860
ccagaggagg tgaccaaggg gaatggttac ttgcagaaaa tggtttccat ttcggacatt  1920
acatccactt ·atagcagcct gctccggtac acctgtgggt catctgtgga agccaccagg  1980
gctgttatga agcacctcgc agcagtgtat caacacggct gccttctcgg actttccatc  2040
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gaaattctga aagccataaa catcaattcc tttgtagagt gtggcatcca tttatatcaa  2160
gagagtacat ccaaatcagc cctgagccaa gaatttgaag ctttctttca aggtaaaagc  2220
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aattgtgcaa gtgccctgga cttcattaaa ctggactttt atgggggagc tatggcttca  2340
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ctcagtttgg tcctcagcac ctgtaagaac atttattctc tcatggtgga agccagtccc  2640
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catgacctac agaatcaacg gctgccgggt ggtctgactg acagcttggg taacttgaag  2760
aaccttacaa agctcataat ggataacata aagatgaatg aagaagatgc tataaaacta  2820
gctgaaggcc tgaaaaacct gaagaagatg tgtttatttc atttgaccca cttgtctgac  2880
attggagagg gaatggatta catagtcaag tctctgtcaa gtgaaccctg tgaccttgaa  2940
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ggaaatgaag ctcttcatga actgatcgac aggatgaacg tgctagaaca gctcaccgca  3120
ctgatgctgc cctggggctg tgacgtgcaa ggcagcctga cagcctgtt gaaacatttg  3180
gaggaggtcc cacaactcgt caagcttggg ttgaaaaact ggagactcac agatacagag  3240
attagaattt taggtgcatt ttttggaaag aaccctctga aaaacttcca gcagttgaat  3300
ttggcgggaa atcgtgtgag cagtgatgga tggcttgcct tcatgggtgt atttgagaat  3360
cttaagcaat tagtgttttt tgactttagt actaaagaat ttctacctga tccagcatta  3420
gtcagaaaac ttagccaagt gttatccaag ttaacttttc tgcaagaagc taggcttgtt  3480
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gggtggcaat ttgatgatga tgatctcagt gttattacag atgagaaagc tcagatgatt    3540
tgcccatggg ttataaaact acttccttac acagtggcag catcagaact ggaattcaga    3600
tctcttgcct cc                                                         3612
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<210> 7
<211> 90
<212> PRT
<213> Artificial Sequence

<220>
<223> consensus sequence

<400> 7
Ala Glu Asp Asp Arg Arg Leu Leu Arg Lys Asn Arg Leu Glu Leu Leu
1               5                   10                  15
Gly Glu Leu Thr Leu Ser Gly Leu Leu Asp His Leu Leu Glu Lys Asn
            20                  25                  30
Val Leu Thr Glu Glu Glu Glu Glu Lys Ile Lys Ala Lys Asn Thr Thr
        35                  40                  45
Arg Arg Asp Lys Ala Arg Glu Leu Ile Asp Ser Val Gln Lys Lys Gly
    50                  55                  60
Asn Gln Ala Phe Gln Ile Phe Leu Gln Ala Leu Arg Glu Thr Asp Gln
65                  70                  75                  80
Glu Leu Leu Ala Asp Leu Leu Leu Asp Glu
            85                  90
```

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<210> 8
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> consensus sequence

<400> 8
Asn Leu Glu Glu Leu Asp Leu Ser Asn Asn Leu Thr Ser Leu Pro Pro
1               5                   10                  15
Gly Leu Phe Ser Asn Leu Pro
            20
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```
<210> 9
<211> 781
<212> PRT
<213> Homo sapiens

<400> 9
Glu Leu Val Leu Pro Glu Val Phe Gly Asn Leu Asn Ser Val Met Cys
1               5                   10                  15
Val Glu Gly Glu Ala Gly Ser Gly Lys Thr Val Leu Leu Lys Lys Ile
            20                  25                  30
Ala Phe Leu Trp Ala Ser Gly Cys Cys Pro Leu Leu Asn Arg Phe Gln
            35                  40                  45
Leu Val Phe Tyr Leu Ser Leu Ser Ser Thr Arg Pro Asp Glu Gly Leu
        50                  55                  60
Ala Ser Ile Ile Cys Asp Gln Leu Leu Glu Lys Glu Gly Ser Val Thr
65                  70                  75                  80
Glu Met Cys Met Arg Asn Ile Ile Gln Gln Leu Lys Asn Gln Val Leu
```

```
                      85                    90                    95
Phe Leu Leu Asp Asp Tyr Lys Glu Ile Cys Ser Ile Pro Gln Val Ile
            100                   105                   110
Gly Lys Leu Ile Gln Lys Asn His Leu Ser Arg Thr Cys Leu Leu Ile
            115                   120                   125
Ala Val Arg Thr Asn Arg Ala Arg Asp Ile Arg Arg Tyr Leu Glu Thr
    130                   135                   140
Ile Leu Glu Ile Gln Ala Phe Pro Phe Tyr Asn Thr Val Cys Ile Leu
145                   150                   155                   160
Arg Lys Leu Phe Ser His Asn Met Thr Arg Leu Arg Lys Phe Met Val
                165                   170                   175
Tyr Phe Gly Lys Asn Gln Ser Leu Gln Lys Ile Gln Lys Thr Pro Leu
                180                   185                   190
Phe Val Ala Ala Ile Cys Ala His Trp Phe Gln Tyr Pro Phe Asp Pro
                195                   200                   205
Ser Phe Asp Asp Val Ala Val Phe Lys Ser Tyr Met Glu Arg Leu Ser
    210                   215                   220
Leu Arg Asn Lys Ala Thr Ala Glu Ile Leu Lys Ala Thr Val Ser Ser
225                   230                   235                   240
Cys Gly Glu Leu Ala Leu Lys Gly Phe Phe Ser Cys Cys Phe Glu Phe
                245                   250                   255
Asn Asp Asp Asp Leu Ala Glu Ala Gly Val Asp Glu Asp Glu Asp Leu
                260                   265                   270
Thr Met Cys Leu Met Ser Lys Phe Thr Ala Gln Arg Leu Arg Pro Phe
                275                   280                   285
Tyr Arg Phe Leu Ser Pro Ala Phe Gln Glu Phe Leu Ala Gly Met Arg
    290                   295                   300
Leu Ile Glu Leu Leu Asp Ser Asp Arg Gln Glu His Gln Asp Leu Gly
305                   310                   315                   320
Leu Tyr His Leu Lys Gln Ile Asn Ser Pro Met Met Thr Val Ser Ala
                325                   330                   335
Tyr Asn Asn Phe Leu Asn Tyr Val Ser Ser Leu Pro Ser Thr Lys Ala
                340                   345                   350
Gly Pro Lys Ile Val Ser His Leu Leu His Leu Val Asp Asn Lys Glu
    355                   360                   365
Ser Leu Glu Asn Ile Ser Glu Asn Asp Asp Tyr Leu Lys His Gln Pro
    370                   375                   380
Glu Ile Ser Leu Gln Met Gln Leu Leu Arg Gly Leu Trp Gln Ile Cys
385                   390                   395                   400
Pro Gln Ala Tyr Phe Ser Met Val Ser Glu His Leu Leu Val Leu Ala
                405                   410                   415
Leu Lys Thr Ala Tyr Gln Ser Asn Thr Val Ala Ala Cys Ser Pro Phe
            420                   425                   430
Val Leu Gln Phe Leu Gln Gly Arg Thr Leu Thr Leu Gly Ala Leu Asn
    435                   440                   445
Leu Gln Tyr Phe Phe Asp His Pro Glu Ser Leu Ser Leu Leu Arg Ser
    450                   455                   460
Ile His Phe Ser Ile Arg Gly Asn Lys Thr Ser Pro Arg Ala His Phe
465                   470                   475                   480
Ser Val Leu Glu Thr Cys Phe Asp Lys Ser Gln Val Pro Thr Ile Asp
                485                   490                   495
Gln Asp Tyr Ala Ser Ala Phe Glu Pro Met Asn Glu Trp Glu Arg Asn
                500                   505                   510
Leu Ala Glu Lys Glu Asp Asn Val Lys Ser Tyr Met Asp Met Gln Arg
    515                   520                   525
Arg Ala Ser Pro Asp Leu Ser Thr Gly Tyr Trp Lys Leu Ser Pro Lys
    530                   535                   540
```

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Gln Tyr Lys Ile Pro Cys Leu Glu Val Asp Val Asn Asp Ile Asp Val
545                 550                 555                 560
Val Gly Gln Asp Met Leu Glu Ile Leu Met Thr Val Phe Ser Ala Ser
                565                 570                 575
Gln Arg Ile Glu Leu His Leu Asn His Ser Arg Gly Phe Ile Glu Ser
                580                 585                 590
Ile Arg Pro Ala Leu Glu Leu Ser Lys Ala Ser Val Thr Lys Cys Ser
                595                 600                 605
Ile Ser Lys Leu Glu Leu Ser Ala Ala Glu Gln Glu Leu Leu Leu Thr
        610                 615                 620
Leu Pro Ser Leu Glu Ser Leu Glu Val Ser Gly Thr Ile Gln Ser Gln
625                 630                 635                 640
Asp Gln Ile Phe Pro Asn Leu Asp Lys Phe Leu Cys Leu Lys Glu Leu
                645                 650                 655
Ser Val Asp Leu Glu Gly Asn Ile Asn Val Phe Ser Val Ile Pro Glu
                660                 665                 670
Glu Phe Pro Asn Phe His His Met Glu Lys Leu Leu Ile Gln Ile Ser
                675                 680                 685
Ala Glu Tyr Asp Pro Ser Lys Leu Val Ala Ser Leu Pro Asn Phe Ile
        690                 695                 700
Ser Leu Lys Ile Leu Asn Leu Glu Gly Gln Gln Phe Pro Asp Glu Glu
705                 710                 715                 720
Thr Ser Glu Lys Phe Ala Tyr Ile Leu Gly Ser Leu Ser Asn Leu Glu
                725                 730                 735
Glu Leu Ile Leu Pro Thr Gly Asp Gly Ile Tyr Arg Val Ala Lys Leu
                740                 745                 750
Ile Ile Gln Gln Cys Gln Gln Leu His Cys Leu Arg Val Leu Ser Phe
        755                 760                 765
Phe Lys Thr Leu Asn Asp Asp Ser Val Val Glu Ile Gly
        770                 775                 780
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<210> 10
<211> 202
<212> PRT
<213> Artificial Sequence

<220>
<223> consensus sequence

<400> 10
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Glu Leu Leu Leu Ser Glu Gly Glu Gly Gly Lys Leu Leu Ile Ala Leu
1                   5                   10                  15
Trp Ser Gly Cys Leu Phe Val Phe Leu Leu Ser Arg Gly Leu Cys Asp
                20                  25                  30
Gln Leu Leu Gly Leu Val Leu Phe Leu Leu Asp Tyr Glu Cys Ile Leu
        35                  40                  45
Ile Asn His Thr Arg Ile Arg Glu Arg Lys Leu Lys Thr Pro Leu Phe
        50                  55                  60
Val Cys Ala Phe Phe Leu Asn Lys Ala Cys Gly Leu Ala Leu Gly Phe
65                  70                  75                  80
Ser Phe Phe Asp Val Glu Asp Leu Thr Leu Lys Thr Ala Gln Arg Pro
                85                  90                  95
Tyr Phe Phe Gln Glu Ala Gly Arg Leu Leu Leu Ser Glu Gly Leu Ser
                100                 105                 110
Ser Tyr Leu Tyr Ser Ala His Leu Leu Ser Leu Gln Leu Gln Val Tyr
        115                 120                 125
Gln Thr Phe Gln Gly Leu Asn Tyr Phe Phe His Pro Ser Leu Ile Gly
```

```
          130                      135                      140
Pro Tyr Ala Trp Glu Leu Ile Cys Leu Val Ser Gln Arg Leu Ser Ile
145                      150                      155                      160
Lys Cys Leu Ser Ser Leu Ser Leu Glu Gln Asn Leu Lys Leu Leu Glu
                    165                      170                      175
Gly Asn Ile Leu Ser Leu Leu Leu Leu Leu Asp Glu Ala Leu Asn Leu
                    180                      185                      190
Leu Gly Lys Leu Leu Leu Phe Asp Asp Ile
                    195                      200


<210> 11
<211> 898
<212> PRT
<213> Artificial Sequence

<220>
<223> majority sequence

<400> 11
Glu Gln Leu Val Leu Asn Gly Val Leu Gly Ala Leu Asn Ser Val Cys
  1                   5                      10                      15
Ile Val Glu Gly Glu Ala Gly Ser Gly Lys Ser Val Leu Leu Gln Lys
                    20                      25                      30
Ile Ala Phe Leu Trp Gly Ser Gly Lys Cys Lys Ala Leu Thr Lys Phe
                    35                      40                      45
Gln Leu Val Phe Phe Leu Ser Leu Ser Ser Thr Arg Ala Asp Gly Gly
                    50                      55                      60
Leu Ala Ser Ile Leu Cys Asp Gln Leu Leu Asp Ile Glu Gly Ser Val
65                      70                      75                      80
Thr Glu Gln Thr Phe Arg Ala Ile Leu Leu Gln Leu Lys Asn Gln Val
                    85                      90                      95
Leu Phe Leu Leu Asp Gly Tyr Asn Glu Ile Lys Pro Gln Asn Cys Ser
                    100                     105                     110
Ile Pro Gln Val Ile Gly Ala Leu Ile Gln Glu Asn His Leu Ser Lys
                    115                     120                     125
Thr Cys Val Leu Val Ala Val Thr Thr Glu Arg Ala Arg Asp Ile Arg
                    130                     135                     140
Gln Phe Gly Ala Leu Ile Ala Glu Val Gly Ala Phe Thr Glu Asp Ser
145                     150                     155                     160
Ala Val Ala Leu Leu Arg Glu Val Leu Ile Lys Glu Leu Ala Glu Leu
                    165                     170                     175
Arg Gly Leu Leu Val Gln Ile Gly Lys Ser Gln Ser Leu Gln Asn Leu
                    180                     185                     190
Gln Lys Thr Pro Leu Phe Val Ala Ala Ile Cys Ala Ile Gln Trp Gly
                    195                     200                     205
Glu Ser Glu Phe Asp Ser Ser Phe Thr Asp Val Ala Val Phe Lys Ser
                    210                     215                     220
Phe Tyr Asp Leu Leu Ile Leu Lys Asn Lys His Lys His Gly Val Ala
225                     230                     235                     240
Ala Ala Asp Ile Leu Lys Ala Thr Val Ser Ser Cys Gly Asp Leu Ala
                    245                     250                     255
Leu Glu Gly Val Phe Ser His Lys Phe Asp Phe Glu Leu Asp Asp Val
                    260                     265                     270
Ala Glu Ala Gly Val Asp Glu Asp Val Leu Leu Thr Thr Gly Leu Leu
                    275                     280                     285
Ser Lys Phe Thr Ala Gln Arg Leu Lys Pro Lys Tyr Lys Phe Leu Ser
                    290                     295                     300
```

```
Lys Ala Phe Gln Glu Phe Leu Ala Gly Arg Arg Leu Ile Ser Leu Leu
305             310             315             320
Thr Ser Asp Glu Gln Glu Glu Val Thr Leu Gly Leu Gly His Leu Gln
            325             330             335
Gln Ile Val Ser Ile Ser Asp Ile Val Ser Ala Tyr Ser Ser Leu Leu
            340             345             350
Asn Tyr Val Ser Gly Leu Ser Ser Val Glu Ala Gly Arg Ala Val Val
            355             360             365
Ser His Leu Ala Ala Val Val Asp Asn Lys Gly Ser Leu Leu Gly Leu
    370             375             380
Ser Ile Ala Asp Asp Tyr Leu Lys His Gln Glu Ser Ile Ser Leu Gln
385             390             395             400
Met Gln Leu Leu Gln Gly Val Lys Asn Ile Thr Glu Gln Ala Ile Leu
            405             410             415
Ser Ala Val Ser Ile Asn Leu Leu Val Leu Ala Gly Ile Thr Ala Tyr
            420             425             430
Gln Ser Ser Thr Val Ala Ala Ala Leu Ser Gln Val Leu Glu Ala Phe
    435             440             445
Leu Gln Gly Lys Ser Leu Thr Leu Gly Ala Gly Asn Leu Pro Asp Tyr
    450             455             460
Leu Phe Asp Phe Phe Asp His Leu Pro Glu Ser Ala Ser Ala Leu Asp
465             470             475             480
Ser Ile Lys Leu Ser Ile Arg Gly Gly Ala Thr Ala Ser Arg Ala Lys
            485             490             495
Ala Ala Val Leu Thr Gly Gly Ile Asp Lys Ser Glu Ala Pro Thr Ile
            500             505             510
Asp Glu Thr Tyr Ile Pro Ala Ser Ala Val Ser Leu Phe Asn Glu Trp
    515             520             525
Glu Gln Glu Leu Ala Thr Leu Glu Val Thr Val Lys Ser Phe Ser Asp
    530             535             540
Leu Asn Lys Gln Ala Ile Thr Asp Leu Gly Thr Gly Phe Ser Ser Ala
545             550             555             560
Ser Ser Leu Gln Leu Gln Ile Lys Arg Cys Ala Gly Val Ala Gly Ser
            565             570             575
Leu Ser Leu Val Leu Ser Thr Cys Lys Asn Ile Tyr Ser Leu Glu Val
            580             585             590
Asp Ala Ser Asp Leu Thr Val Val Gly Glu Asp His Leu Thr Ile Val
    595             600             605
Thr Asn Leu Thr Val Leu Ser Ile His Asp Leu Ala Ser Gln Arg Leu
    610             615             620
Glu Gly Gly Leu Thr Asp Ser Leu Gly Asn Leu Lys Gly Leu Ile Glu
625             630             635             640
Leu Ile Arg Asp Ala Leu Glu Leu Ser Glu Ala Ser Ala Ile Lys Leu
            645             650             655
Ala Glu Gly Leu Lys Asn Leu Lys Lys Met Cys Leu Ile Ser Leu Leu
            660             665             670
Glu Leu Ser Ala Ala Gly Glu Gly Leu Leu Leu Ile Val Lys Ser Leu
    675             680             685
Ser Ser Glu Pro Cys Asp Leu Glu Glu Ile Gln Leu Val Ser Cys Cys
    690             695             700
Leu Val Ala Gly Ala Val Gln Ile Leu Ala Gln Ile Leu His Asn Leu
705             710             715             720
Val Lys Leu Ser Ile Leu Asp Leu Ser Glu Leu Ser Val Asp Leu Asp
            725             730             735
Gly Asn Ile Ala Val His Ser Val Ile Pro Asp Glu Phe Asn Val Leu
            740             745             750
Glu Gln Leu Thr Ala Leu Leu Leu Gln Ile Gly Ala Asp Val Asp Gly
```

```
            755                760                765
Ser Leu Ser Ser Leu Val Ala Ser Leu Glu Glu Val Ile Ser Leu Val
    770                775                780
Ile Leu Gly Leu Glu Gly Gln Gln Leu Thr Asp Thr Glu Ile Ser Ile
785                790                795                800
Leu Gly Ala Phe Ile Gly Leu Gly Ser Leu Ser Asn Leu Glu Glu Leu
                805                810                815
Ile Leu Ala Gly Gly Asp Val Ser Ser Asp Gly Trp Leu Ala Phe Met
                820                825                830
Gly Val Phe Glu Val Ala Lys Leu Leu Val Phe Phe Asp Phe Ser Thr
            835                840                845
Lys Glu Phe Leu Pro Asp Pro Ala Leu Val Gln Gln Leu Ser Gln Val
    850                855                860
Leu Ser Val Leu Ser Phe Leu Gln Thr Ala Arg Leu Val Gly Trp Gln
865                870                875                880
Leu Asp Asp Asp Ser Val Val Val Ile Thr Gly Ala Phe Lys Leu Val
                885                890                895
Thr Gly
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<210> 12
<211> 3615
<212> DNA
<213> Homo sapiens

<400> 12
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atcaaattgc cacccaacaa gcctagcttc ttgcagaaaa gttaacttgg ataacacttg   180
gctaagtttt ctgactaatg ctggatcagg tagaaattct ttagtactaa agtcaaaaaa   240
cactaattgc ttaagattct caaatacacc catgaaggca agccatccat cactgctcac   300
acgatttccc gccaaattca actgctggaa gttttcaga gggttctttc caaaaaatgc     360
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aagagcttca tttccatctt tttccaggta attttctgat aaatcaagaa tgctcagttt    600
gaccaaattg tgaagattct gagctaggat tttcactgca tttgcagaca agcagcagga   660
gactaattga atttcttcaa ggtcacaggg ttcacttgac agagacttga ctatgtaatc    720
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tgtggcagag ctgaatattt tccccagata tctgatatct tgcttattca acttgctgaa   1140
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agccctgctg ggaatgtagg tttctggggc ctcttccatg tggattccac ctgtgtcttc   1260
tgcagccttt tcccatgaag ccatagctcc cccataaaag tccagtttaa tgaagtccag   1320
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tgagttgata tataagcttt taccttgaaa gaaagcttca aattcttggc tcagggctga   1440
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gagaggcctc ttggcgatgg aaagtccgag aaggcagccg tgttgataca ctgctgcgag   1620
gtgcttcata acagccctgg tggcttccac agatgaccca caggtgtacc ggagcaggct   1680
gctataagtg gatgtaatgt ccgaaatgga aaccattttc tgcaagtaac cattcccctt   1740
ggtcacctcc tctggctcat gagacgtcaa taaactgctg agtcttcgtc ctgctgtgta   1800
ctcctggaat gacttgtgaa agaatttata ctttggcttg aacctttgag ctgtatattt   1860
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acagaggagc ccagttgtca gcaggacatc ctcattcacg ctggacacat cctgcagttc    1920
gaaatcaaac ttgtgggaga acacaccctc cagagctagg tctccacagt ggtccaggct    1980
ccgaatgaag tcacttgcag ccacaccttt atgtttgtgt ttgtttttct gtatcaacag    2040
atcatagaag gtatggaaca gcgttgtttg tgtgtgagag tggaactcac tttcacccat    2100
ctggattgca caagtgatga ccacaaagag aggggtcttc atgagattcc tcaagcacct    2160
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